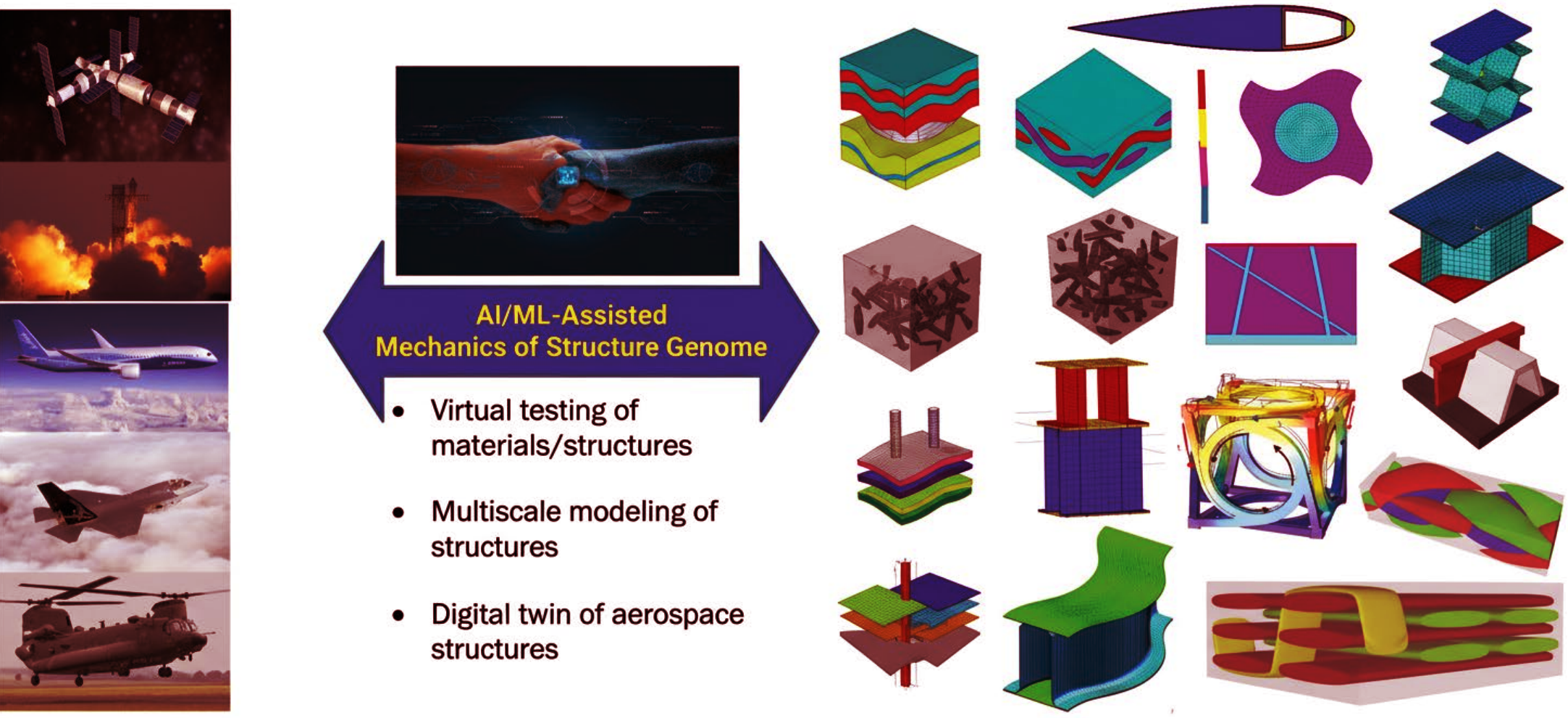

פרופסור וונבין יו

פרופסור ע"ש מילטון קלאוזר לאווירונאוטיקה ואסטרונאוטיקה
אוניברסיטת פרדו, אינדיאנה, ארה"ב

Professor Wenbin Yu

Milton Clauser Professor of Aeronautics and Astronautics
Purdue University, Indiana, USA

סמינר במסגרת בית הספר להנדסה מכנית
Seminar in the framework of the School of Mechanical Engineering

MODELING OF ADVANCED MATERIALS AND STRUCTURES IN THE AGE OF AI

The seminar will be held on Monday
26 January 2026, at 14:00
Room 206, Wolfson Building
Tel Aviv University, Ramat-Aviv

הסמינר יתקיים ביום שני
26 בינואר 2026, בשעה 14:00
חדר 206, בניין וולפסון
אוניברסיטת תל-אביב, רמת-אביב

Light refreshments will be served before the seminar | כיבוד קל יוגש לפני הסמינר

The Institute of Advanced Studies
IAS Fulbright-TAU
Senior Scholars

המכון ללימודים מתקדמים
חוקרים בכירים
פולברייט-אוניברסיטת ת"א

TEL AVIV UNIVERSITY
The Lowy International School

Wenbin Yu

Milton Clauser Professor of Aeronautics and Astronautics
Purdue University, Indiana, USA

January 26, at 14:00
Room 206, Wolfson Building

MODELING OF ADVANCED MATERIALS AND STRUCTURES IN THE AGE OF AI

Engineering systems are increasingly made of advanced, anisotropic and heterogeneous materials whose behavior spans multiple length scales - demanding rigorous multiscale modeling for credible design and analysis. The Mechanics of Structure Genome (MSG) offers a paradigm shift in this arena: it minimizes information loss, overcomes limitations of traditional modeling approaches and confines all approximations to the constitutive modeling step. In doing so, MSG links microstructural features directly to structural performance while remaining compatible with mainstream design tools using conventional beam/plate/shell/solid elements, enabling rapid insertion of new materials early in the design cycle.

Yet important barriers persist, including computational cost, scarce or uncertain microstructural data, non-physics-based model assumptions, and limited accessibility for non-experts. Emerging AI/ML methods can overcome these barriers - accelerating time intensive computations, inferring missing microstructural information, enabling natural-language workflow creation, and democratizing access to sophisticated computational tools.

This talk will show how AI-assisted, MSG-based modeling delivers a practical balance of fidelity, speed, and usability - opening a pathway to faster material down-selection, more reliable structural predictions, and broader adoption of advanced modeling tools.

WENBIN YU is the Milton Clauser Professor of Aeronautics and Astronautics at Purdue University. He also serves as the Director for the Composites Design and Manufacturing HUB and the Chief Technology Officer of AnalySwift LLC.

His areas of expertise include micromechanics and structural mechanics, with a focus on anisotropic and heterogeneous materials and structures. Prof. Yu has an extensive research portfolio, having authored one book and over 130 journal papers. He has also developed ten computer codes, widely used by tens of thousands across government labs, universities, and research institutes

Prof. Yu is a Fellow of both ASME and ASC and an Associate Fellow of AIAA. He chaired ASME Aerospace Division Executive Committee and AIAA Materials Technical Committee. He initiated and chaired the ASME SSDM conference. He also served as the technical program chair for ASME IMECE 2025 and on the editorial board of nine international journals.

He received ASC Award in Composites, ASC Outstanding Researcher Award, ASME Boeing structures and materials award, ASME Dedicated Service Award, JEC Innovation Award, ASEE Outstanding New Mechanics Educator Award, Georgia Tech Outstanding Young Engineering Alumni Award, and others.